What is claimed is:

1. A method for channel decoding and error correcting modulated
data reproduced from an optical disc comprises the steps of:

(a) setting a channel code including channel data patterns of channel data
symbols and information data symbols which correspond to respective channel
data patterns;

(b) producing demodulated data including the information data symbols
and erasure flags by demodulating the channel data symbols, using the channel
code; and

(c) performing error-erasure correction on the information data symbols
produced in the step (b), using error locations indicated by the erasure flags
having a predetermined value,

wherein the step (b) of producing demodulated data comprises the steps
of;

(b1) outputting the information data symbols if the channel code has the
information data symbols corresponding to the channel data patterns; and

(b2) outputting erasure symbols as the information data symbols and
setting the erasure flags to the predetermined value if the channel code has no
information data symbols corresponding to the channel data patterns.

2. The method of claim 1, wherein each the erasure symbols is one of
the information data symbols in the channel code or a predetermined value.

1   3.   The method of claim 1, wherein the channel code is one of an EFM

2   code and an EFM+ code.

1   4.   The method of claim 3, wherein the demodulated data includes 8-

2   bit information data symbols and 1-bit erasure flags.

1   5.   A system for channel decoding and error correcting modulated data

2   reproduced from an optical disc comprises:

3   a channel decoder, including a channel code having channel data

4   patterns that channel data symbols can have and information data symbols

5   which correspond individually to the channel data patterns, and for producing

6   demodulated data having the information data symbols and erasure flags by

7   demodulating the channel data symbols, using the channel code.

8   a memory for storing the demodulated data outputted from the channel

9   decoder; and

10   a decoding unit for performing an error-erasure correction on the

11   information data symbols, using error locations indicated by the erasure flags

12   having a predetermined value,

13   wherein the channel decoder outputs the information data symbols if the

14   channel code has the information data symbols corresponding to the channel

15   data patterns, and the channel decoder outputs erasure symbols as the

16   information symbols and sets the erasure flags to the predetermined value if the

17 channel code has no information data symbols corresponding to the channel

18 data patterns.

1   6.   The system of claim 5, wherein each of the erasure symbols is one

2   of the information data symbols in the channel code or a predetermined value.

1   7.   The system of claim 5, wherein the channel code is one of an EFM

2   code and an EFM+ code.

1   8.   The system of claim 7, wherein the demodulated data includes 8-

2   bit information data symbols and the 1-bit erasure flags.

1   9.   The system of claim 5, wherein the decoding unit includes:

2   a means for receiving from the memory code words obtained from the

3   demodulated data;

4   a means for detecting a code word having errors more than a

5   predetermined number; and

6   a means for providing second erasure flags of a predetermined value to

7   information data symbols of the detected code word.

1   10.   The system of claim 9, wherein the predetermined number is two

2   (2) for a compact disc (CD) system or five (5) for a digital versatile disc (DVD)

3   system.

1   11.   The system of claim 9, further including:

2   a means for deinterleaving data from the decoding unit to generate

3 deinterleaved code words containing the information data symbols and the

4 second erasure flags; and

5   a second decoding unit for performing error-erasure correction on the

6 information data symbols of the deinterleaved code words using the second

7 erasure flags.

1   12.   A method for correcting errors and erasures in modulated channel

2 data reproduced from an optical disc, comprising the steps of:

3   providing a channel code having channel data patterns of the modulated

4 channel data and information data symbols corresponding to the channel data

5 patterns, respectively;

6   comparing channel data symbols of the modulated channel data with the

7 channel data patterns in the channel code;

8   producing information data symbols corresponding to channel data

9 patterns of the channel data symbols to form demodulated data;

10   producing erasure symbols with erasure flags to form the demodulated

11 data when the channel code has no channel data patterns matching the channel

12 data symbols;

13   providing code words obtained from the demodulated data; and

14   correcting errors and erasures in the code words using the erasure flags.

1 13.   The method of claim 12, wherein the channel code is an EFM code

2 for a compact disc (CD) system and an EFM+ code for a digital versatile disc

3 (DVD) system.

1 14.   The method of claim 12, further including the steps of:

2   detecting a code word having errors more than a predetermined number;

3 and

4   providing second erasure flags of a predetermined value to the detected

5 code word.

1 15.   The method of claim 14, wherein the second erasure flags are

2 provided to the detected code word such that each of the second erasure flags is

3 attached to each of information data symbols or erasure symbols of the detected

4 code word.

1 16.   The method of claim 14, further including the steps of:

2   deinterleaving the code words on which the correcting step has been

3 performed; and

4   correcting errors and erasures in the deinterleaved code words by locating

5 defective symbols using the second erasure flags.